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Ferromagnet/superconductor layered superlattices

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Abstract

New 0π and ππ states with an antiparallel orientation of magnetization in the adjacent FM layers are predicted for ferromagnetic metal/superconductor (FM/S) superlattices. If the thickness ds.of the S layers is less than the threshold value dπs, these states have a higher critical temperature Tc than the earlier known 00 and π0 LOFF states. A new type of logic device combining the advantages of superconducting and magnetic recording channels in one sample is proposed on the basis of FM/S superlattices. Good quantitative agreement with known experimental phase diagrams is obtained.